



Power to the people: Developing networks through rural community energy schemes

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Power to the People: Developing Networks through Rural Community Energy Schemes

Abstract

Social capital, commonly understood as a system of shared norms, values and beliefs embedded within social networks is widely recognised as a facilitator of entrepreneurial activity. However, while the literature base has increased, questions remain as to how it works. Rural communities, despite well documented developmental challenges, are commonly associated with high levels of reciprocity and trust due to shared history or culture. Despite this there is a paucity of research linking social capital and rural social enterprise. Drawing upon these theoretical frameworks the study offers an understanding of how social capital works in practice through the examination of six rural social enterprises engaged in renewable energy schemes. The research adopts a qualitative approach. Focusing on the utilisation and development of networks, results indicate that social capital is both a process and an outcome of rural social enterprise.

1. Introduction

Social capital, commonly understood as a system of shared norms, values and beliefs embedded within social networks (Putnam, 2000) is characterised by co-operation, reciprocity and trust and is said to improve social relationships (Ratten and Welpel, 2011). Based on the understanding that entrepreneurship is also embedded within a social context (McKeever et al., 2014; Zahra, 2007) the importance of social capital to entrepreneurship is generally accepted. However questions arise as to how it works in practice (Light and Dana, 2013; Gedajlovic et al, 2013).

When considering local development, a series of initiatives have been introduced that aim to empower local communities. Social enterprises are seen as pivotal within this vision for societal activity. As organisations that trade for the purposes of creating social, economic and environmental value (Ratten and Welpel, 2011; Chell et al., 2010) they play an important role in the pursuit of common

interests and are seen to provide innovative solutions to a range of societal problems. Furthermore, as change agents (Alvord et al., 2004) they can act as catalysts for transformation through the mobilisation of social actors.

Rural regions face particular challenges that hinder development opportunities. These include low population densities, distance from labour or capital markets, higher infrastructure costs and outward migration (Tregear and Cooper, 2016; Steiner and Atterton, 2015). The importance of social networks, cohesion and trust in overcoming these challenges has been highlighted (Townsend et al., 2016; Moyes et al., 2015). Social enterprises are ideally placed to alleviate some of these challenges. Their ability to identify opportunities and achieve outcomes that will deliver positive social innovation provides a catalyst for rural economic development and social value. (Bosworth et al., 2016; Rogers et al., 2012; Hoffman and High-Pippert, 2010).

Given this background, the current study seeks to understand how social capital relates to rural social enterprise. Despite a growing body of literature, to date this is an area that is under-developed (Valchovska and Watts, 2016; Munoz et al., 2014). Secondly given the challenges associated with rural enterprise we seek to discover how they contribute to rural development (Steiner and Teasdale, 2017). The current study further responds to specific calls for research into the role of key actors, and how they acquire and develop networks (Di Domenico et al., 2010; Dacin et al., 2010).

The study considers rural social entrepreneurs operating community energy initiatives. Although the existence and value of social capital is implied in the process and outcomes of these schemes (Ryan et al., 2014; Seyfang et al., 2013; Walker et al., 2010) to the best of our knowledge this is the first paper that explicitly makes these connections. Within this context the study addresses gaps in understanding as to how social networks facilitate the knowledge transfer process (Hargreaves et al., 2013).

The paper is structured as follows. Firstly, the concept of social capital is introduced before rural issues are addressed. To provide context the paper then focuses on previous research on rural renewable energy schemes. This forms the basis for the research questions. These questions are addressed through a qualitative, case study approach. This is outlined in section 3. The paper continues with a presentation of key findings, discussions and conclusions.

2. Theoretical Framework

2.1 The Role of Social Capital within Entrepreneurship.

Entrepreneurship is a socially embedded phenomenon (McKeever et al., 2014; Zahra, 2007). In this regard it is argued that social capital influences perceptions and the realisation of opportunities, and increases access to appropriate resources amongst well-connected actors (Light and Dana, 2013; Galbraith et al., 2007).

Putnam (2000) identifies three forms of social capital. Bonding capital incorporates a sense of belonging and local identity and is developed through relationships within small groups, such as family, friends or neighbours. While it is implied that the element of trust is strongest in bonding capital (Townsend et al., 2016) it is often insular (Light and Dana, 2013; Newman and Dale, 2005). On the other hand, bridging capital which facilitates shared innovations between networks, and linking capital, the development of relationships with those of a higher social order are essential for real economic development (Leonard and Onyx, 2003). Other researchers considering the nature of social interactions have employed Granovetter's (1973) strong and weak tie hypothesis. In this, while weak, or more distant social ties are most likely to encourage creativity and new ideas, strong ties are essential for business activity, particularly to provide resources and bestow legitimacy. The levels and forms of social capital embedded in entrepreneurial networks are thus said to influence outcomes (Adler and Kwon, 2002).

2.2 *The Rural Context for Social Enterprise*

Whilst entrepreneurship is considered a means of stimulating rural development, rural regions face particular challenges including distance from consumer or capital markets and higher infrastructure costs (Tregear and Cooper, 2016; Steiner and Atterton, 2015). These challenges are compounded by low population densities coupled with outward migration and as such there are often difficulties sourcing or retaining skilled labour (Steiner and Teasdale, 2017; Tregear and Cooper, 2016; Steiner and Atterton, 2015). The importance of social networks, community cohesion and trust in overcoming these challenges has been highlighted (Townsend et al., 2016; Moyes et al., 2015).

Jack and Anderson, (2002) examining the process of embedded-ness in rural communities point out that this enables entrepreneurs to assess local needs and access specialised knowledge, including knowledge of local resources, cultures and norms. Furthermore, they are more able to recognise opportunities and more motivated to generate solutions (Thompson et al., 2000). Therefore, in a rural context, social capital has been positively linked to the support of economic development (Lee et al., 2005) and to facilitate knowledge transfer (Tregear and Cooper, 2016). The value of rural social capital can be supported by the work of Steiner and Atterton (2014) who point to high levels of specialisation, a culture of collaboration and a higher business density compared to urban areas. Additionally, (Skerratt et al., 2012) historically high levels of interdependence in these areas has been linked to a corresponding rise in civic action. As such, the qualities inherent in rural communities have the potential to be exploited to overcome locational challenges (Steiner and Teasdale, 2017).

Social enterprise is also seen as a catalyst for local and regional economic development (Rogers et al., 2012; Hoffman and High-Pippert, 2010). There are a number of reasons why this is the case. Di Domenico et al., (2010:688) highlight how social enterprises by their nature locate themselves in *“environments that are de facto resource poor”*. In these environments social entrepreneurship has

been positively linked with an ability to leverage, utilise and combine limited resources in a way in that creates value (Doherty et al., 2014; Seyfang and Haxeltine, 2012). This is facilitated through the mobilisation of social actors (Alvord et al., 2004) and by creative collaborations (Austin et al., 2006). This demonstrates that personal attributes are vital components in resource-scarce environments and is aligned with the idea of social capital as a resource which contributes to entrepreneurial activity.

2.3 *Social Capital and Community Energy*

Contextually the research examines the operation of renewable energy initiatives by community-based social enterprises. Within the literature, initiatives such as these are commonly grouped under the term 'community energy'. For the sake of clarity we adopt this terminology. Renewable energy is viewed as a mechanism to stimulate rural development in Scotland and Ireland (Scottish Government, 2015; DCENR, 2012). Walker, et al., (2010), Warren and McFadyen, (2010); Walker et al., (2007) note how projects such as these increase employment opportunities at a time of reduced agricultural income and outward migration. Encouraging utilisation of local knowledge and networks are further seen as positive impacts on economic development (Hoffman and High-Pippert, 2010; Rogers et al., 2008; Gubbins, 2007).

Research indicates that community-based social enterprises may be well positioned to deliver renewable energy projects (DECC, 2014; Seyfang et al, 2013; Rogers et al., 2012; Bomberg and McEwan, 2012; Walker et al., 2010). Key factors include (i) local ownership and control, closely linked to the provision of community benefits (Ryan et al., 2014; Warren and McFayden, 2010) (ii) understanding of local needs that in turn leads to the development of locally appropriate solutions (e.g. DECC, 2014; Rogers et al, 2008) and (iii) increased engagement and information dissemination, thereby increasing community cohesion and trust (Devine-Wright and Wiersma 2013; Rogers et al., 2012; Aitken, 2010). These factors highlight the relevance of social capital when investigating such initiatives.

Over the past decade there has been an upsurge in community-led initiatives (DECC, 2014; Seyfang et al., 2013; Rogers et al., 2012). There has been some focus on the role of these schemes in facilitating behaviour change (Humphreys and Sugden, 2015; Middlemiss and Parrish, 2010), and on an increase in 'green symbolism' (Warren and McFayden, 2010) both in the context of making a local contribution to a global issue, and in addressing micro-level issues (Walker et al, 2010). These are important components of social capital.

Further strands of literature concern the motivations for involvement in community energy schemes (DECC, 2014; Haggett et al., 2013; Catney et al 2014). Seyfang et al., (2013) in their study involving 190 community projects provide a summary. While macro-level issues such as influencing energy policy or reducing carbon emissions were noted, of equal importance were symbolic resources (Bomberg and McEwan, 2012), such as empowerment, capacity building or social cohesion. Aligned with Seyfang et al., (2013) others have highlighted the desire for knowledge transfer, in that the project should act as an example to other communities and the wider public (e.g. Rogers et al, 2008; Walker and Cass, 2007). The development of social capital is implicit in these objectives.

2.3.1 Challenges to Community Energy development

While some groups are well placed to deliver community energy projects (Seyfang et al., 2013; Rogers et al., 2012; Bomberg and McEwen, 2012) many fail to materialise (Harnmeijer et al., 2013; Haggett, 2012). While lack of success has been linked to availability of finance (Rogers et al. 2012; Sunley and Pinch, 2012) it is also broadly related to the relative strengths of individuals and groups within these communities (DECC, 2014; Harnmeijer et al., 2013; Seyfang et al, 2013).

Creamer, (2015); Julian and Olliver (2014); Hernmeijer et al., (2013) and Willis and Willis (2012) provide a comprehensive list of competencies relevant to community energy projects. These include

business skills such as financial and project management, risk assessment, administration and marketing. Disparities between communities have been noted in relation to these skills (DECC, 2014; Bomberg and McEwan, 2012). Communities have also reported issues in relation to technical expertise (DECC, 2014; Richards et al., 2012; Walker, 2008). Many community energy schemes are “*heavily reliant*” on volunteer time and expertise (DECC, 2014; Julian and Olliver, 2014:3; Seyfang et al., 2013; Willis and Willis, 2012) and volunteer fatigue is common (Haggett et al., 2013). These disparities may be of particular significance in a rural setting. In contrast, volunteerism is driven by shared values and norms (Trivedi and Stokols, 2011). As such initiatives such as these seek to draw upon social capital.

2.3.2 *Network Development and Project Champions*

When considering community energy, networks have been seen to encourage collaboration, knowledge transfer and trust (DECC, 2014; Ryan et al., 2014; Warren and McFayden, 2010). The following section will consider ‘project champions’ as facilitators for network development.

Within the social entrepreneurship literature the importance of individual entrepreneurs or key personnel is highlighted (Zahra et al., 2009). Shaw and Carter (2007) examine how the reputation of individual entrepreneurs impact on success. Other significant factors are previous entrepreneurial knowledge, experience and skills (Lehner and Kaniskas, 2012; Ozgen and Baron, 2007). This increases trust in the ability of the social entrepreneur to lead and deliver further ventures. When it comes to developing a community energy project, the majority are initiated by “*committed community group leaders and volunteers*” (DECC, 2014:33; Haggett et al., 2013; Willis and Willis, 2012). Many of these actors have backgrounds particularly suited to the development of a renewable energy project, e.g. management, administrative or technical experience (DECC, 2014). These individuals are mostly well-known, trusted and embedded in the community (DECC, 2014; Devine-Wright and Wiersma, 2013). This may indicate that community orientation is a factor in their success (Hoffman and High-Pippert, 2009).

Project champions often possess a blend of relevant skills and personality traits. Ryan et al, (2014) examining a wind project in Ireland found that determination was essential for success. Leaders such as these are vital to enthuse others, to develop and control the project, to engender confidence and trust, to engage the wider community and to encourage participation (DECC, 2014; Hoffman and High-Pippert, 2010). Due to previous endeavours, these individuals may already have been active in developing social capital and as a result new recruits are motivated by "*an act of neighbourliness*" (Hoffman and High-Pippert; 2010:3). This allows the project to both draw on and build local networks, to share or access resources (e.g. Ozgen and Baron, 2007).

Social entrepreneurs are also committed to capacity building. Gubbins, (2007) and SEAI, (2012) using examples from community energy projects in Scotland and Ireland respectively show how this creates a "*local reservoir of knowledge*" (Rogers et al., 2012:243) and in turn increases cohesion and confidence to implement other ventures (DECC, 2014; Walker et al., 2010). Social entrepreneurs can therefore be seen to contribute to bridging social capital.

From an external networking perspective, many have noted the desire of social entrepreneurs for knowledge transfer and to act as an example to other communities and the wider public (DECC, 2014; Rogers et al, 2008; Walker and Cass, 2007). Seyfang et al, (2013) show that peer-to-peer networking is an important part of this process, Viewing similar installations is a means of avoiding common mistakes, assures initiators of viability (DECC, 2014), and thereby reduces risk (Rogers et al, 2012). Furthermore, it demonstrates the development of bridging social capital. Where community energy is not yet widespread most are dependant to some extent on intermediaries such as advisory bodies, local authorities or energy agencies (DECC, 2014; Hargreaves et al., 2013; Seyfang et al., 2013; Haggett, 2012) for advice and support (CES, 2015; Ryan et al., 2014). This helps alleviate some of the capacity barriers and demonstrates the importance of linking social capital.

In summation of the background literature, key considerations for the study relate to the motivations and facilitators for the development of community energy initiatives; the types of networks developed by rural social entrepreneurs during the process and whether such collaborations enable rural social entrepreneurs to harness their social capital to overcome the challenges associated with rural enterprise - hence enabling them to become effective agents of change.

3. Methodological Approach

Based on the aims of the study a qualitative case study design was deemed to be most appropriate. This approach offers breadth and depth of response (Saunders et al, 2012; Yin, 2003) and allows the more subjective social and contextual factors to be considered (Lincoln and Guba, 1985). Moreover this ensures that the findings accurately represent the experiences and viewpoints of the population under review (Easterby-Smith et al., 2008) thus enhancing the credibility and transferability of the research (Eisenhardt and Graebner, 2007; Yin, 2003). Six social enterprises were examined using a combination of data collection approaches. These are explained in more detail in section 3.3 below.

3.1. Research Setting

The social enterprises operate within rural communities located in Scotland [4] and Ireland [2]. Within this paper, 'community' is viewed in terms of community of place with geographic scope determined by local administrative boundaries. 'Rural' in this case is defined as communities with a resident population under 10,000. Rural communities in Scotland and Ireland are ideally placed to benefit from renewable energy initiatives. Scotland has access to 25% of Europe's potential wind energy (SDI, 2012) with Ireland four times that of the EU average (Rourke et al, 2009). With 17% of land area in Scotland covered in forests, there is significant opportunity for biomass production (Scottish Executive, 2007) while in Ireland there is '*exceptional*' biomass resource (Rourke et al, 2009:1979) due to a favourable climate and a high percentage of agricultural land (Murphy et al., 2014). Turning to hydro-energy,

while Scotland generates over 90% of total UK output (DECC, 2013) in Ireland there are few '*significant*' sites over and above those already developed (DCENR, 2012).

3.2 Selection Criteria

The six communities met the selection criteria in terms of (i) rurality; (ii) involved in the generation of electricity or heat through the use of wind, hydropower or biomass. (iii) operation of a social enterprise model as a means of managing these projects; (iv) reported high levels of community involvement or networking activities. Seven projects were examined within these communities, five of which were operational prior to commencement of the study with a further two in final stages of construction.

3.3 Data Collection

The case study evidence was built through a series of semi-structured interviews with social entrepreneurs and those closely involved with each project. Alongside involvement in their respective renewable energy initiatives these social entrepreneurs were highly active in local community, voluntary or business development and were identified through, for example, community websites or from agencies associated with community energy. To obtain a wider perspective, further respondents were selected through snowball sampling.

21 interviews were carried out between March-September 2014. The majority [n=18] were carried out face-to-face enabling the researcher to gain closer access to the objects of study and providing the opportunity to obtain diverse and in-depth responses. The remainder were conducted by telephone. An interview guide was developed using topics derived from existing literature and grouped under broad themes consistent with the research objectives. Interviewees were asked questions relating to their background, expertise, motivations, level of involvement in the project and areas of responsibility. They were then asked to provide information on the project, their recollection of the timeframe, and to recount influencing factors on project implementation. Throughout the

process interviewees were encouraged to reflect on relationships with internal and external stakeholders. Finally, to gauge community response, information was gathered on broader awareness, acceptance and support of the project. As this is an area where knowledge is still developing, an inductive approach was incorporated to gain theoretical and practical insights. Following Denscombe (2007:176), the researcher began by *“introducing a theme or topic and then letting the interviewee develop their ideas and speak more widely on the issues raised”*. This served to uncover areas of interest not initially considered (Saunders et al., 2012) therefore minimising pre-conceived ideas and expectations of findings (Flyvbjerg, 2006). Interview responses were supplemented by observational data and an extensive range of documentary evidence. The use of multiple respondents and sources of evidence increases robustness, minimises bias and increases credibility and trustworthiness (Eisenhardt and Graebner, 2007; Yin, 2003).

3.4 Data Analysis

Prior to analysis data was prepared into similar formats. This involved transcribing interviews to add to notes taken during observations or on-site and other documentary evidence. Transcriptions were annotated with ideas to aid interpretation. After transcription the Braun and Clarke (2006) model of analysis was used to examine the evidence. This process was applied as follows: (i) reading and rereading the data, (ii) coding, (iii) theme identification (iv) reviewing themes, (v) defining themes, and (vi) production of results.

4. Results

This section summarises the findings and is presented around three key themes. The first examines the personal and professional characteristics of the entrepreneurs and their roles within the community. Given that entrepreneurship is socially embedded, the second considers how these qualities enable development of local networks before thirdly, considering the development and

utilisation of external networks. Table 1 presents an overview of the initiatives and participants and shows how these are identified throughout the findings and subsequent discussion.

Table 1: Case Study Profiles

CASE REF	COUNTRY	TECHNOLOGY	SIZE	RESPONDENT (CODE)
S1	Scotland	WIND	800 Kw	Social Entrepreneur (A) Social Entrepreneur (B) Social Entrepreneur (C) Social Entrepreneur (D) Social Entrepreneur (E) Development Officer (F)
S2	Scotland	HYDRO	20 kW	Social entrepreneur (A) Social entrepreneur (B) Community council rep. (C) Local businessman (D)
S3 (H)	Scotland	HYDRO	998 Kw	Social entrepreneur (A) Project administrator (B) Project manager (C) Local businessman (D)
S3 (B)		BIOMASS*		Manager: biomass plant (E)
S4	Scotland	BIOMASS	85 Kw	Social entrepreneur (A) Technical expert (B)
I1	Ireland	WIND	2 x 2.3 MW	Social Entrepreneur (A) Social Entrepreneur (B) Social Entrepreneur (C) Social Entrepreneur (D) Social Entrepreneur (E) Energy Agency rep. (F)
I2	Ireland	HYDRO	65 Kw	Social entrepreneur (A)

*supplier of biomass products

4.1 Project Champions

In all cases, success was attributed to exceptional individuals who were viewed as project champions. These individuals variously described as “*influential*”, “*determined*”, and “*committed*”, conveyed “*vision*” and a “*can-do attitude*”, e.g. describing the retired business-woman at S3 a project administrator remarked;

“...she can see things that maybe you and me couldn’t and you think “my goodness me- how did you think of that” (S3,B).

In common with the mission of social entrepreneurship, all recognised and were motivated to address social, environmental and economic needs. Those in Ireland referred to their peripherality and the volatility of oil and gas producing nations. In relation to environmental motivators some simply stated *“that goes without saying”* (S2,A). However, the findings suggest that local development was a greater stimulus. While all were keen to develop capacity through the use of local skills, they accepted that direct employment opportunities are mainly temporary and at construction phase. Therefore, they had developed a broader understanding of how their projects could *“keep value local”*, e.g. those associated with the wind projects (S1, I1) produced evidence to show how they would make a more significant contribution to the local economy than the community benefit funds derived from developer-led projects. These revenue streams were invaluable to fund a wide range of sporting, educational, social and cultural initiatives and act as a catalyst for further entrepreneurial activities. In Scotland, a rural economist

“saw the vast opportunities that the income from this turbine could bring to this little community providing there were enough people to get out there with ideas and projects to spend the money” (S1,B).

Other common objectives expressed were *“community empowerment”* *“to promote cohesion”* *“build resilience”* or to *“improve the quality of life”* within their communities.

All were active to some degree in local community, voluntary or business development as defined by the following characteristics; (i) recognised by peers as an integrated and respected member of the community (ii) entrepreneurial mind-set, or the ability to *“make things happen”* (iii) strong evidence of community or environmental activity (iv) current or previous involvement in local business. These factors are summarised in Table 2 and further explored in subsequent sections.

Table 2: Profiles of the social entrepreneurs

Case Ref	Interviewee Code	Business Experience	Community/voluntary connections
S1	A	Rural economist, consultancy.	Development Trust, Community council
	B	Self-employed geo-chemist.	Development Trust, Community council, youth organisations.
	C	Retired project manager: telecoms	Development Trust, Community council, consultant on community service provision.
	D	Retired: Energy Industry experience	Development Trust.
	E	Architect	Development Trust, Community Council. Trustee: Public Park scheme.
S2	A	Retired solicitor	Development council; Local historical, cultural links.
	B	Retired electrical engineer	Development council; Local historical, cultural, sporting links.
S3(H)	A	Retired: various local and international businesses	Trustee of local business development fund.
S3(B)			Operates local visitor centre; Preservation of local history and culture
S4	A	Retired: Museum curator	Operates local visitor centre.
I1	A B C D E	Semi-retired farmer Farmer Retired civil servant Farmer Farmer	All consulted re: local area development planning
I2	A	Retired: electrical and mechanical experience.	Local historic links

4.1.1. Community Embeddedness

Described by their peers as “*very well known*” and “*respected people in the community*” these entrepreneurs had a background of involvement in a diverse range of local activities and an “*appetite to get things done*”. Relating to the development of community initiatives in general, an energy agency representative in Ireland explained that those who get involved

“are always going to be the chair of the local GAA, someone who does stuff for the local parish council - every time” (I1,F).

Prior community involvement had developed project related skills, knowledge of local needs and social capital. As such, they were in a better position to engage with the community and to engender trust and participation. For example, an accountant with over 20 years' experience with the community council suggested *"if I was going to run off with all the cheese I would have done so long before now"* (S1;C).

Across all projects, the desire to utilise and develop social capital was either specifically stated or implied. This was more evident in Scotland, for example, *"part of the reason for this whole organisation in my mind is to try and raise aspirations and opportunism"* (S3,A). While this approach was attributed to mutual culture and history, it was also seen to be the result of public spending cuts. At S2 a local business-man explained how

"the village councils they had to do it or nobody did it, so there is a stronger community spirit in these little towns" (S2,D).

4.1.2 Local Knowledge

Community embeddedness is closely tied to local knowledge. In turn, these two components were seen to facilitate opportunity recognition. The following examples illustrate these links. In the hydropower projects, entrepreneurs were keen to point out where hydroelectricity was part of the local landscape. For a Scottish group, where the preservation of local history formed an essential part of their social mission, the idea originated as a result of an exhibition on previous sustainability initiatives when

"...we discovered that somebody had set up his own little turbine with a wheel he had found on the shore.....and made enough electricity for lights for his house and we thought - well if he can do it is there something we could do for ourselves? - so we did" (S3,B)

At S2 and I2, hydropower was reinstated at pre-existing sites . One entrepreneur recalled,

"we had been on a walk and we came back via the golf club and came across the bridge and we stopped and looked and the old weir was there and the plinth where it stood and we were talking about it and said "it might be a good idea to restore this" (S2,B).

This system has now been set up with interpretive panels and integrated with the town's pathway system to encourage engagement. While these entrepreneurs remarked on the appropriateness of the sites, for them it was fitting that,

"we are replacing it as it was almost 100 years ago which again is a good thing. It's a traditional part of [the town]" (S2,B).

4.1.3 Serial Entrepreneurship

All had been active in other community projects or had a wealth of business acumen, gained in areas such as engineering, finance, farming or even trekking holidays in the Himalayas. All were keen to utilise the skills gained through these experiences for the good of their communities.

In Scotland, one entrepreneur was said to have *"only just finished off one scheme and she had another idea"* (S3,D). When asked if all these ideas were linked to sustainability, the project administrator warned, *"she doesn't like that word. Sustainability, it sounds like standing still too much"* (S3;B). These serial entrepreneurs outlined future plans that included public or private sector collaboration, project expansion and other activities unrelated to renewables. Referring to a comment made in relation to expansion by the leader of the wind project in Ireland and perhaps providing insight into how to influence others, a representative of an energy agency remarked,

"he just said it in passing, but that wasn't him just saying in passing, that was him planting the seed with the LEADER companies, with the county council, with us, and he is going to come back someday, reasonably soon and say "how do we make this work". That is the sort of person he is, you know. He will deliver that, I have absolutely 100% faith (I1,F).

4.2 Networks

While these projects could draw on the expertise and personal characteristics of the project champions none had *"a full range of competencies"*. Typically they experienced difficulties across key areas. These were related to limited skills in business, lack of knowledge about the technologies, or in accessing resources. Further challenges were noted in relation to the time taken for project

development. To overcome these challenges entrepreneurs developed and utilised key networks. These are explored in the following sections.

4.2.1 Internal Networks

Project Teams

While instrumental in starting projects these individuals were equally adept at harnessing the enthusiasm of others. Teams were generally formed through existing personal, community or business networks. Almost all attributed group formation to “*sheer luck*” for example, “*we have a great mixture of people and I must say we were blessed with the group because everybody had a talent and everybody had the determination and knowledge*” (I1,A). However, the following examples suggest team formation was deliberate with members chosen on knowledge or resource demands.

“I still remember the day, I was building a big wall, and she came down and hi-jacked me - would I be interested in this thing and I said “Oh I don’t know”, and the rest is history” (S3,D).

Another interviewee in Scotland admitted “*there were a lot of complementary skills brought into one place and it was a while before we realised*” (S1,E). His colleagues recalled how they felt drawn by the “*infectious enthusiasm*” “*charisma*” and “*influence*” of the leader. Despite operating his own business, one respondent (S1,B) felt “*I can’t sit back and let this guy do this all on his own*”.

Speaking of an entrepreneur at S2, a long-standing friend remarked,

“...it often comes down to one person, to the one person in the driving seat who can choose the correct team around him. Without them even knowing half of the time why they have been anointed” (S2,A).

These team members brought their own qualities, for example, “*local knowledge*” and “*unbelievable stamina*” (I2,A). One entrepreneur described how he “*recruited*” a retired nuclear engineer who was

“a real Godsend to us. I think we would still have got there but it would cost us more. Cost us a fortune to hire professional people to do what he has done. He was probably the key to the thing in the end” (S2,B).

Teambuilding was a continual process. With installation works due to commence, the same entrepreneur had made the acquaintance of a civil engineer who had just retired to the town

“...he knows what is going on and we are keeping him informed and he will be a useful man when the civil engineers start work”.

The various interviewees were unanimous that “*camaraderie*” “*mutual support*” and respect were vital in this process. Recalling a conversation which took place on their way to an award ceremony one group illustrate this point.

“...you asked me ‘why do you think it worked?’ and I started rabbiting on about because it was community-owned, community benefit and then I said and maybe the 5 of us. And you said ‘that’s why it worked, it worked because the 5 of us worked well. (S1,C).

Another group in Ireland (I1) suggested that this was why “*we didn’t lose interest –there was always someone to fall back on*” (C).

Community Engagement

Wider participation was encouraged through a rigorous process of community consultation in the early stages, a subsequent “*two-way flow*” of information and by “*frequent*” community meetings.

One interviewee (S1,C) described

“how much interaction we have had walking around this area, putting leaflets through doors, talking to people, communicating with people. I don’t think you could implement this scheme unless you communicated with the people of the community”.

Explaining the decision to re-site their wind turbine, the same group explained “*we were very sensitive to these people, because these people - we live here and these are our friends*” (S1,B). Because of these activities, respondents reported increased levels of interest, not only in the renewables projects but also in the wider activities of the various community development councils. Additionally, there was obvious pride in many of the projects. A development officer expressed her opinion that it was a “*great example of what a community can do*” (S1,F).

Community engagement brought a number of tangible outcomes including practical help in the form of preparation of the access road at S1, transfer of ownership of land at S2 and increased access to funding and other financial incentives. At S2, respondents reported that members of the community

had voluntarily increased subscriptions to the development council to cover any potential shortfall in funds and there was the suggestion they would be amenable to a community share issue. Other additional funding included donations or interest free loans from community councils. Those in Ireland (11, 12) reported negotiating discounts on labour and equipment, stage payments and interest-free loans when dealing with local suppliers. In Scotland, an enterprise generating heat by means of biomass (S4) sourced the majority of their fuel free of charge as “...everybody in the area knows that we are looking for fallen trees, old pallets, anything that somebody else doesn’t want” (S4,A).

4.2.2 External Network Development

In addition to networks built up within the community, a number of external relationships were developed. These included peer-to-peer relationships and the development of networks with a range of external agencies.

Peer-to-peer Interaction

In general, peer-to-peer interactions were prevalent and seen as more trustworthy. Many had actively sought out similar schemes in the UK and abroad to address knowledge gaps. In turn, they shared their knowledge with others.

“you have this communication between the communities and that is a help as well, I mean I used it at the early stages to speak to other people and find out you know if ..are these things viable, should we do it and how do you get on. And then when our hydro became newsworthy if you like, I was getting calls” (S2,B).

Peers were useful for information on reliability, efficiency rates and maintenance costs, about local availability of parts or in relation to sources of advice and funding. At S3 an entrepreneur “got other people that knew something about it to come and just gather information” (S3,E). Similarly, when asked how they heard about a business expansion scheme, an Irish group replied “it’s just word of mouth, its sitting down talking to other people” (I1,E). There was evidence that peer-to-peer collaboration enabled the groups to avoid common mistakes. As one entrepreneur admitted it was “important to see what problems other people have had” (S2,A).

External Agencies

Peer-to-peer interaction was utilised in conjunction with other external networks. A group in Ireland (I1) praised their local energy agency who carried out feasibility studies, submitted applications for planning and grid connection and gave financial and technical advice. The same project benefitted from the expertise of a local higher education institute, with one entrepreneur explaining how this enabled them to not only acquire business and technical knowledge but to establish networks,

“... if we had a class he would invite somebody from the bank who would finance some of these projects or from some of the turbine manufacturers, or whatever, so we were building up sort of knowledge and contacts all the time” (I1,B).

In Scotland, advice came from a subsidiary of the Cairngorms National Park who,

“are heavily into growing communities, I mean they are trying to empower each community or communities by giving them the expertise to run committees, run everything..... they are more helping to get organisations set up and running” (S2,C).

Other external bodies used at key points provided accountancy, project management or administration services. While this increased cost, most were aware of the need to reduce risk. Of equal value was their trustworthiness. Entrepreneurs recounted how trusted network members recommended contractors (S1; S4) or who *“warned them against a supplier”* (I1, F)

Illustrating network expansion, some of these bodies worked in collaboration with manufacturers, consultants or funders. Those at S1 explained the benefits of working within a *“circle of businesses”* that were familiar with and trusted each other’s work. In this case, the funders (Triodos) worked in collaboration with Enercon, the manufacturers, with the insurance company, the contractors, and even *“down to the guy who drives the digger, the company who laid the foundations, because if the foundations for the turbine aren’t quite right then the bank have lost their money”* (S1,B).

The majority realised that in establishing relationships *“a lot of diplomacy along the way helped”* (I1,A). As a result, one female entrepreneur (S3,A) was said to *“get money out of a stone”*. Others recalled how they re-negotiated accountancy fees or managed to persuade funders to extend the deadline for a grant. Two groups, determined to use specific contractors, re-negotiated tender prices.

In one case *“because they wanted the work they agreed on a price and they brought it down by 60%. One phone call saved over €80,000”* (I1,B).

Further relationships were established with local councillors or representatives from government departments. Having established *“goodwill”* one respondent recalled a planning officer who *“went back and championed the whole thing for us”* (S2,B). Many others engaged with the media, local celebrities and academic partners. While they were keen to raise the profile of both social enterprise and renewables, this was a deliberate strategy to increase resources.

“our local press have been good and we have kind of dribbled information to them. So I think it is quite a good idea to keep them on board” (S3,A).

“I was always writing to the local magazine that this weir had potential to generate money and it could be fixed up so the idea was out in people’s imagination” (I2,A).

One respondent (S3,A) had established relationships at senior government level. To illustrate this point, she recalled writing to the Cabinet Secretary for Finance when they were on the verge of bankruptcy. *“I said, this is the situation, please help. And by the middle of January a loan had been found through CARES emergency loan”*.

These findings suggest that social capital is both a facilitator of network development and an output from social entrepreneurial activity. This will be discussed in further detail in Section 5.

5. Discussion

The responses and practices of key actors in the study capture the essence of social capital and show how it can be *“harnessed”* to overcome locational challenges (Steiner and Teasdale, 2017). The following sections discuss the fundamental implications of the study.

5.1. Project Champions

Previous studies examining social enterprise and community energy have emphasised the significance of the innovative individual (DECC, 2014; Haggett et al., 2013; Willis and Willis, 2012; Walker, et al., 2010). In general, the individuals in the study aspired to achieve social, environmental and economic sustainability. Some explicitly voiced the desire to move away from a dependency culture. This was particularly prevalent within the larger schemes in Scotland. Considering the entrepreneurial profiles connected with these schemes, it may be that previous business experiences had heightened aspirations or simply that at the time of writing subsidy levels were relatively generous, thereby increasing profitability. These factors have been discussed by numerous authors (e.g. DECC, 2014; Doherty et al., 2014) and are important for local and regional development (Rogers et al., 2012; Hoffman and High-Pippert, 2010).

Within the projects, the desire to utilise and create social capital was either specifically stated or implied. Motivations largely mirrored those of Seyfang et al., (2013) although with much of the focus at local level. The study shows how social entrepreneurs aspired to contribute to what Bomberg and McEwan (2012) term symbolic resources, for example, community empowerment and regeneration, social cohesion or resilience. This was most evident in areas where there has historically been greater inter-dependence. As suggested by Skerratt et al., (2012) these factors depend on and strengthen internal bonds. It has been argued that this approach is insular (Newman and Dale, 2005) and fails to develop Putnam's 'linking' social capital. However there was no evidence of these behaviours in the study locations. In fact, due to professional backgrounds, remoteness of location and the desire for community development all entrepreneurs were aware of the value of establishing wider links.

5.1.2. Embeddedness of the entrepreneur

In examining the profile of these individuals, many were well-known, trusted and embedded in the community (DECC, 2014; Devine-Wright and Wiersma, 2013; Jack and Anderson, 2002). A background

of community involvement in a diverse range of activities enabled them to become part of their social structure and establish their trustworthiness. (Jack and Anderson, 2002). As a result they were well positioned to assess local needs, motivated to address them and more able to develop locally acceptable solutions (DECC, 2014; Devine-Wright and Wiersma, 2013; Rogers et al., 2012; Warren and McFadyen, 2010). For example the decision to re-site the wind turbine at S1 was a deliberate strategy to foster inclusivity and cohesion (DECC, 2014; Walker et al., 2010) thereby contributing to bonding social capital (Putnam, 2000).

Social enterprise is an important catalyst for local and regional economic development (Rogers et al., 2012; Hoffman and High-Pippert, 2010). Gubbins, (2007) found that social entrepreneurs are committed to the development of social capital through capacity building, for example, empowering the wider community to implement other ventures (DECC, 2014; Walker et al., 2010). At S1 a strategy was adopted whereby community ventures were only part-funded. This was seen to encourage an entrepreneurial mind set and self-reliance (Seyfang et al., 2013). Additionally they introduced criteria where in return for funds, the recipient organisation was encouraged to carry out further community engagement activities. This shows evidence of knowledge transfer and cohesion (DECC, 2014; Walker et al., 2010). Developing social capital in this manner could empower community members, stimulate development and encourage involvement from a wider stakeholder base, thereby alleviating some of the issues with volunteer fatigue (Haggett et al., 2013).

5.1.3. Serial Entrepreneurship

The entrepreneurs in the study were frequently described as people who “*make things happen*” (Lehner and Kansikas, 2012) and their previous entrepreneurial endeavours (serial entrepreneurship) enhance the entrepreneurial skills base and develops confidence in the ability of community groups to deliver their projects (DECC, 2014; Seyfang et al., 2013; Rogers et al., 2012; and Gubbins. 2007). Many of these individuals were already discussing plans for expansion, with one respondent asserting

“he will deliver that, I have absolutely 100% faith” (I1,F). Identifying and supporting individuals such as these could stimulate rural development (Steiner and Teasdale, 2017; Scottish Government, 2015; Warren and McFadyen, 2010).

5.2 *Network Development*

The following section discusses the types of networks utilised and how these relationships helped alleviate the challenges of rural community energy projects.

5.2.1 *Project Teams*

The social entrepreneurs in the study were instrumental in engaging and empowering others, (DECC, 2014; Ryan et al, 2014; Hoffmann and High-Pippert, 2009). Members were added to the core team at various stages of development, targeted as a result of their competencies, shared ethos and based on trust, and were accessed quickly and economically through existing social networks (Doherty et al., 2014; and Di Domenico et al., 2010). In turn these team members *“brought along their own contacts”*. As all the projects were *“heavily reliant”* on volunteer time and expertise, this also helped overcome the difficulties associated with accessing labour in rural locations (Tregear and Cooper, 2016; Townsend et al., 2016; and Steiner and Atterton, 2015); and demonstrates how participation is driven by shared values and norms (Hoffman and High-Pippert; 2009) and the importance of embeddedness (Trivedi and Stokols, 2011; Jack and Anderson, 2002) when developing and utilising social capital.

5.2.2 *Community Engagement*

For those in Scotland, frequent reference was made to *“community spirit”* and it was found that pre-existing groups often created a strong sense of community, demonstrating the importance of embeddedness, local knowledge and previous entrepreneurial endeavours (Hoffman and High-Pippert, 2009). Co-operation, trust and participation were increased through a combination of transparency, high levels of consultation and information dissemination, sensitivity to local needs and

by the provision of community benefits (Henry, 2015; Ryan et al., 2014; Devine-Wright and Wiersma; 2013).

Development of community social capital increased access to resources and cost efficiencies. See for example S2 where a retired engineer was persuaded to get involved just before installation. Others availed of community funds providing some evidence of cohesion and wider support for the project. This also provided a means of spreading project risk. The projects could be seen to make a contribution to community pride (Walker et al, 2010). At S1, a development officer expressed her opinion that the project was a “*great example of what a community can do*”. In another example, (S2), funding is used to keep the heritage centre open thereby preserving local historic links. While this could be seen as evidence of pre-existing cohesion, within these cases, it also appeared to be an effective mechanism for building capacity and social capital.

5.2.3. External Networks

Co-operation, reciprocity and trust are regarded as common characteristics of rural communities, given their historical and cultural traditions. The enterprises actively fostered these elements of social capital. Firstly, peer-to-peer networking played an important role in knowledge transfer and in increasing access to resources (DECC, 2014 Seyfang et al, 2013; Rogers et al, 2012). There was an appetite for shared learning (Rogers et al, 2008; and Walker and Cass, 2007). Highlighting the importance of bridging capital (Galbraith et al., 2007), many had visited similar schemes in the UK and further afield. It emerged that the majority of those who collaborated, did so on a regular basis, . demonstrating the value of social capital to improve social relationships (Putnam, 2000; and Ratten and Welpé, 2011). This is consistent with the work of Tregear and Cooper, (2016) who established links between social capital and knowledge transfer in a rural context.

Linking capital was important in the development of all projects, with a dependency to some extent on partnerships with external stakeholders (DECC, 2014; Seyfang et al. 2013; and Haggett et al., 2013). The findings indicate relationships between previous experience, accessibility to information, and trust within this process. For example, in Scotland, (S1) respondents described the value of working with a “*circle of businesses*” who knew and trusted each other. These relationships were generally developed early on in most projects. These acted as a conduit through which the social enterprises could access other networks and enabled them to overcome capacity barriers related to low population densities and inhibited labour markets, such as limited skills in business or technical expertise (DECC, 2014). The findings therefore increase understanding of rural social enterprise by showing how social capital can be “*harnessed*” to overcome locational challenges (Steiner and Teasdale, 2017).

All optimised opportunities for positive public relations. Communities in Scotland noted the importance of local politicians in heightening public awareness and engagement. Some utilised the support of local celebrities and most were keen to create an image as a ‘green’ community (Warren and McFayden, 2010). Fostering these relationships had positive impacts, stimulating interest from other community groups, support agencies, researchers and the public (Rogers et al, 2008; Walker and Cass, 2007). This emphasis on collaboration outside organisational boundaries acts as a mechanism for knowledge transfer. In addition these networks were used to complement the resources available through bonding or bridging capital. These findings are similar to those reported in Ratten and Welppe (2011).

In particular, our findings provide evidence that social capital can be successfully channelled and rural community development stimulated by relatively small numbers of committed leaders (project champions) who are embedded within their communities. The study also highlights the influence that

these individuals exert over peer groups and wider external network populations. We consider these findings relevant to policy and practice and suggest that when considering rural development, individuals such as these should be identified, empowered and supported. In this way, local authorities could harness these influences to their advantage, not only for the development of community energy projects but for other entrepreneurial endeavours.

6. Conclusion

This paper has considered rural social entrepreneurs operating within community renewable energy initiatives, and the value of social capital in the process and outcomes of these schemes, and how social networks positively facilitate the knowledge transfer process. It is concluded that in rural areas, social capital is an ongoing process facilitating entrepreneurial activities and outcomes of community renewable energy initiatives. In particular bonding capital is manifested through social cohesion, trust and embeddedness, as is the value of engaging and interacting with other relevant stakeholders across a network of connections (bridging and linking capital). The paper also demonstrates how networks enable rural social entrepreneurs to overcome the challenges of location and thereby contribute to rural development, most notably in relation to the acquisition of skills and knowledge transfer and to provide innovative solutions to societal needs.

A number of interlinking factors have been uncovered that impact on the development of community renewable energy schemes, in particular the importance of social ties and cultural aspects on the process; with differing aspirations and attitudes towards the development of social capital noted between the communities in Scotland and Ireland. As a result, we recommend that in further studies, consideration be given to the uniqueness of geographical and socio-cultural contexts when attempting to evaluate other community related schemes. Finally, given the effective nature of social entrepreneurs in rural communities, further work is needed on how to harness their potential as a positive force for local and regional development.

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